

CLAIMS**We claim:**

1. A predistortion circuit for a power amplifier, the predistortion comprising:
a Doherty power amplifier having a carrier amplifier and a peak amplifier, the bias levels for said Doherty power amplifier selected to provide for predistortion of predetermined characteristics of an RF signal, said bias levels selected to precompensate for distortion of said RF signal by an upstream amplifier.
2. The predistortion circuit as recited in claim 1, wherein one of said predetermined characteristics is gain as a function of input power level.
3. The predistortion circuit as recited in claim 2, wherein the bias level is selected to provide gain expansion as a function of input power.
4. The predistortion circuit as recited in claim 1, wherein one of said predetermined characteristics is phase.
5. The predistortion circuit as recited in claim 4, wherein the bias level is selected to provide phase compression as a function of input power level.
6. A linear power amplifier circuit comprising:
a power amplifier having predetermined characteristics as a function of RF input power;
and
an upstream predistortion circuit having characteristics selected to precompensate for said predetermined characteristics of said power amplifier as a function of input power.
7. The linear power amplifier circuit as recited in claim 6, wherein said predistortion circuit is configured as a Doherty amplifier.

8. The linear power amplifier circuit as recited in claim 7, wherein said power amplifier is configured as a Doherty amplifier having a predetermined gain compression characteristic as a function of input power.
9. The linear power amplifier circuit as recited in claim 6, wherein said predistortion circuit is configured to have a gain expansion characteristic such that the output gain of the circuit is relatively linear over the input range of the power amplifier.
10. The linear power amplifier circuit as recited in claim 6, wherein power amplifier is configured as a Doherty amplifier having a predetermined phase compression characteristic as a function of input power.
11. The linear power amplifier circuit as recited in claim 10, wherein said predistortion circuit is configured to have a phase expansion characteristic such that the output gain of the circuit is relatively linear over the input range of the power amplifier.
12. A linear power amplifier circuit comprising:
 - a power amplifier having predetermined characteristics as a function of RF input power;
 - an upstream predistortion circuit for precompensating said predetermined characteristics of said power amplifier; and
 - means for electronically tuning said predistortion circuit.
13. The linear power amplifier circuit as recited in claim 12, wherein said predistortion circuit is configured as a Doherty amplifier.
14. The linear power amplifier circuit as recited in claim 6, wherein said tuning means includes means for electronically tuning the predistortion circuit such that the output gain of the circuit is relatively linear over the input range of the power amplifier.

15. The linear power amplifier circuit as recited in claim 6, wherein power amplifier is configured as a Doherty amplifier having a predetermined phase compression characteristic as a function of input power.

16. The linear power amplifier circuit as recited in claim 12, wherein said tuning means includes means for electronically tuning the predistortion circuit such that the phase characteristic of the circuit is relatively linear over the input range of the power amplifier.